

## Technical Notes / Notes techniques et bibliographiques

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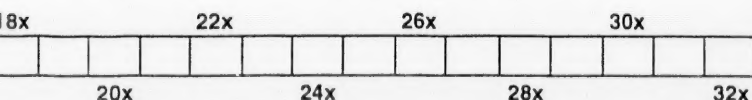
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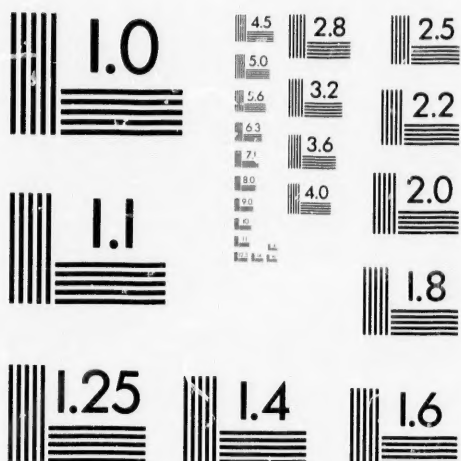






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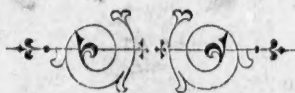
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IN  
ARITHMETIC

*Suitable for Candidates  
preparing for the Entrance Examinations  
to the Prince of Wales College  
and Normal School.*

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SCHOOLS OF PRINCE EDWARD ISLAND

BY  
D. J. MACLEOD  
CHIEF SUPERINTENDENT OF EDUCATION



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1892

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wall.  
a brick covers 14 sq. in. in  
a single wall.

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## PROBLEMS IN ARITHMETIC

SUITABLE FOR CANDIDATES PREPARING FOR THE ENTRANCE  
EXAMINATIONS TO THE PRINCE OF WALES  
COLLEGE AND NORMAL SCHOOL.

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1. Show which is the least and which the greatest of the following fractions:  $-\frac{1}{5}$  of  $9\frac{1}{5}$ ,  $\frac{82}{99}$  of 9,  $\frac{99}{82}$  of 8.2.
2. If telegraph posts are placed 80 yards apart, and a train passes one every 4 seconds; how many miles an hour is it running?
3. A regiment marching  $3\frac{1}{2}$  miles an hour takes 110 steps in a minute. What is the length of the step?
4. How many yards of carpet 15 inches wide will cover the floor of a room  $22\frac{1}{2}$  ft. by 19 ft.?
5. Simplify  $83 - 1\frac{7}{8}$  of  $2\frac{5}{20}$  of  $1\frac{1}{3} + 2\frac{1}{2} \div \frac{3}{14} - 7$ .
6. Find the sum of 6.27, 18.651, and 12.345, and the difference between .34027 and .27.
7. If a room be 12 ft. square, what must its height be in order that the area of the walls may amount to 60 sq. yds.?
8. A stone house is 36 ft. by 24 ft. How many perches of mason work are there in the basement walls if they are 24 in. thick and 9 ft. high?

9. Find the cost of a square mile of prairie land at \$3.25 per acre.
10. A field in the form of a rectangle is 15 chains long and 40 rods wide. How many acres does it contain?
11. The estimated value of a school district is \$450,000. How many mills on the dollar will have to be levied to raise a tax sufficient for \$1,200 school expenses?
12. A wheat field of 37 acres will average a yield of 22 bushels to the acre. What is the standing grain worth if wheat is worth \$1.25 a bushel and it costs \$1.60 an acre to prepare it for market?
13. What will it cost to lay the brick of a house 36 ft. by 30 ft. and 21 ft. high, with a flat roof and double walls, at \$2.75 per thousand?
14. How many feet of  $1\frac{1}{4}$ -in. flooring are required for a verandah around three sides of a house 40 ft. long and 24 ft. wide, if the verandah is 8 ft. wide.
15. Find the cost of the lumber for the dressed door facings of 15 doors, each 7 ft. high and 2 ft. 8 in. wide, the facings being 6 in. wide, at \$18 per M. feet
16. Find the cost of laying a double roof 50 ft. long, rafters 24 ft. long, with shingles 4 in. to the weather, at \$3.60 per M.
17. Find the cost of lathing and plastering a room 12 ft. by 14 ft. and 9 ft. high, with laths at 30 cents a bunch, and plaster at 10 cents a square yard.
18. What will it cost to survey 36 miles of railway at \$1.12½ per chain?
19. Find the cost of carpeting a stairway of 24 steps, each 12 in. wide, and having a rise of 8 in., allowing 2 ft. extra for the projection of the steps; the carpet costing \$1.25 per yard.

20. From a lot 40 rods square I sold 40 square rods. What is the value of the remainder at \$120 per acre?

21. How many feet of lumber in a sidewalk 160 yds. long, 8 ft. wide, and  $1\frac{1}{2}$  in. thick?

22. What time would 36 men, working  $10\frac{1}{2}$  hours a day, require to build a wall which 24 men working 9 hours 20 minutes a day, can build in 9 days?

23. How many revolutions will be made by a wheel which revolves at the rate of 360 revolutions in 7 minutes, while another wheel, which revolves at the rate of 470 in 8 minutes, makes 658 revolutions?

24. If I borrow £500 for 13 months when money is worth  $4\frac{1}{2}$  per cent., how much ought I to lend in return for 15 months when money is worth  $3\frac{1}{4}$  per cent?

25. If 7 men, working 16 days, can mow a field 1320 yards long, and half a mile wide, what will be the length of a field 1320 yards wide, which 4 men can mow in 42 days?

26. Fifteen horses, having four feeds a day, can be kept for two months for 16 guineas, what will be the cost of keeping 20 mules for 5 months, giving them three feeds a day, a horse's feed being  $\frac{3}{4}$  of a mule's?

27. Sixty thousand bricks are required for a wall 50 yards long, 15 ft. high, and 1 ft.  $10\frac{1}{2}$  in. thick. Knowing each brick to be 9 inches long, and  $4\frac{1}{2}$  inches wide, find its thickness.

28. A man left his eldest son one-third of his property; his two other sons, each, one-seventh; his three daughters, each, one-tenth; the remainder of his property, which amounted to £680, he left in legacies. What was the whole amount he left?

29. Divide £3,800 among A, B, and C, so that A shall have twice as much as B, and C shall have one-sixth of B's share.

30. A cistern has three pipes, A, B, C, which together can fill it in 15 minutes. The pipe A by itself could fill it in an hour; B could fill it in 45 minutes; in what time could C fill it?
31. A can mow a field in six days of 9 hours; B can mow it in 8 days, and C in 12 days. Supposing that A after mowing for a day is joined by B, and that after another day they are joined by C, when would the work be finished?
32. Divide 1.56 by 156.25; and subtract  $4.1\dot{5}\dot{6}$  from  $13.2\dot{5}$ .
33. Find the value of 3.751875 of £3 6s. 8d.
34. Find the simple interest upon £3 375 for  $2\frac{2}{3}$  years at 6 per cent. per annum.
35. A room is 20 ft. 9 inches long, 15 ft 3 in. wide, and 12 ft. high; find the cost of papering it with paper per  $\frac{2}{3}$  feet wide at  $4\frac{1}{2}d.$  a yard.
36. Simplify  $.031339 \times 3.\dot{1}\dot{3} \div \frac{62}{351}$ .
37. If a tradesman with a capital of £500 gain £60 in seven months, how much will he gain in a year with a capital of £420?
38. Two men or 5 women can do a piece of work in 12 hours, how long will 5 men and 2 women take to do it?
39. If 3 men or 5 women can do a piece of work in 20 days, in what time will it be done by 8 men and 20 women working together?
40. Reduce  $3.11\dot{3}\dot{6}$  miles to yards.
41. Find the circumference of a wheel which makes 1048 revolutions in  $3\frac{1}{2}$  miles.
42. Reduce 100,196,196 square inches to acres, etc.
43. In 1,749,134 seconds, how many weeks, days, etc.?
44. Reduce 1,186,126, inches to miles, etc.

45. Reduce  $\frac{5}{8}$  of a pound Troy to the fraction of a pound Avoirdupois.
46. Find the value of .009943 of a mile.
47. Divide 101 by 1.01, and .101 by 10.1.
48. Reduce 14 hours 15 minutes to the fraction of  $3\frac{1}{2}$  days.
49. Divide .05625 by .0275.
50. Divide .5 by 25; 87.5 by 2.5, and .055757592 by .009207.
51. Resolve 18, 16, 36, 44, 45, 48, 63, 121 into their simplest factors, and find their least common multiple.
52. A dishonest milkman mixes a pint of water with every two quarts of milk. How many gallons will he make in this way out of 20 gallons of pure milk.
53. A well is 18 yards 2 inches deep, and the wheel is 4 ft. 2 inches round. How many turns of the wheel will raise the bucket?
54. Find the value of .2625 of a mile.
55. Add .60457; 46.70056; 5.80007; and 4.7896.
56. Reduce 2.025 miles to yards.
57. If a bankrupt has assets to the amount of \$1,020 and debts to the amount of \$3,225, how many cents on the dollar will his creditors receive?
58. A person sold  $\frac{2}{3}$  of his estate, bequeaths  $\frac{3}{4}$  of the remainder to his son, and leaves the rest to be distributed equally among three charities. If each of these charities receives \$136.25 what is the value of the estate?
59. What is the circumference of a wheel which makes 514 revolutions in passing over 1 mile, 467 yards, 1 foot?

60. A piece of cloth when measured with a yard measure that is  $\frac{2}{3}$  of an inch short appears to be  $10\frac{1}{2}$  yards long. What is its true length?
61. Reduce 42 rods, 1 yard, 8 inches to the fraction of a mile.
62. Divide the product of 6.225 and 8.25 by .0025.
63. Find the sum of 17.01, .1303, 500.42101, .001 and 6.6.
64. Divide 6.2301533682 by 8.8964.
65. What number added to  $1\frac{7}{10} + 3\frac{9}{10} + 2\frac{1}{10} + \frac{5}{24}$  will make the sum total 10?
66. Give in feet the value of 7.0125 miles.
67. Find the average of  $21\frac{2}{3}$ ,  $73\frac{1}{3}$ , 0,  $3\frac{13}{20}$ , 82,  $17\frac{3}{20}$ ,  $5\frac{1}{4}$ ,  $9\frac{5}{12}$ .
68. A and B can do a piece of work in 7 days, B and C can do the work in 8 days, and all three together can do it in 5 days. What part of the whole work can each do in one day?
69. Divide 78 by 361.059 to the three places of decimals.
70. Find the value of  $2.5 + \frac{1.5}{.02} - 6.002$ .
71. Find the average of  $12\frac{1}{2}$ , 21,  $7\frac{3}{4}$ , .034, 3.125, 0, 24.5, and  $12\frac{7}{20}$ . Express the fractional part decimally.
72. Reduce to the simplest form  $\frac{435.1 \times .0046}{.125}$
73. A brick 9 inches long,  $4\frac{1}{2}$  inches broad, and 3 inches thick weighs 9 pounds nearly. What would a brick weigh if it were 12 inches long, 6 inches broad, and  $4\frac{1}{2}$  inches thick?
74. A man buys eggs at 11 cents per dozen, and sells them at 2 cents apiece. What does he gain per cent?
75. What sum, put out at  $3\frac{1}{2}$  per cent for 6 years, will produce \$28.87 $\frac{1}{2}$ , simple interest?

76. Divide  $1 - (\frac{1}{2} + \frac{1}{3} + \frac{1}{4})$  by  $1 - \frac{1}{2}$  of  $\frac{1}{3}$  of  $\frac{1}{4}$ .

77. At what price per hundredweight must goods be sold, which were bought at \$5 per ton, in order to get 6 per cent?

78. A can walk 10 miles in  $2\frac{1}{4}$  hours, and B can walk 11 miles in  $2\frac{1}{2}$  hours. They start to walk a match of 55 miles. Which will win and by how much time?

79. If a room is 27 ft. 5 inches long, 14 ft. 7 inches wide, 12 feet 10 inches high, how much paper  $\frac{7}{8}$  of a yard wide is required to cover the walls?

80. If I buy sugar at \$7 per cwt., at what rate per lb. must I retail it to gain  $7\frac{1}{4}$  per cent?

81. Simplify  $\frac{12.4 + 0.064 - 0.066}{0.002}$

82. Find the cost of papering a room 21 feet long,  $16\frac{1}{2}$  feet wide,  $10\frac{1}{4}$  feet high, at fifteen cents per square yard.

83. A can run 10 yards to B's 9. How many yards' start must A give B in a mile to make an even race?

84. If \$850 amounts to \$913.75 at  $2\frac{1}{2}$  per cent, find the time.

85. A room is 10 ft. high,  $5\frac{1}{3}$  yards long, and 3 yards wide. It contains a door 3 ft. by 4 ft., two windows each 5 ft. by 4 ft., and a fireplace 6 ft. by 4 ft. 6 inches. How many square yards on its walls require to be painted?

86. If 120 men build a house 60 ft. high in 15 days, how many men will build a house 55 feet in 10 days?

87. A garrison of 1000 men have provisions for 30 days. At the end of 10 days a reinforcement arrives, and the provisions last only 5 days. What is the number of the reinforcement?

88. A sum of money was borrowed at 5 per cent. simple interest. In seven years it amounted to \$810. What was the sum borrowed?

89. If 100 men in 6 days of 10 hours can dig a trench 200 yards long, 3 yards wide, and 2 yards deep, in how many days of 8 hours can 180 men dig a trench 360 yards long, 4 yards wide, and 3 yards deep?

90. By selling 12 pounds of tea for \$7.56, I can gain 5 per cent. What do I gain or lose per cent. by selling 50 pounds of the same tea for \$31?

91. If 20 men build a wall 800 feet long, 10 feet high, and 18 inches thick in 14 days of 8 hours, how thick a wall will 15 men build 900 ft. long and 15 feet high in 21 days of 9 hours?

92. If 2 horses can plough 7 acres of ground in a day, how many horses will plough 161 acres in  $11\frac{1}{2}$  days?

93. If 14 men can mow 168 acres in 12 days of  $8\frac{1}{4}$  hours, how many acres can be mowed by 20 men in 11 days of  $7\frac{1}{2}$  hours?

94. Simplify  $\frac{(0.075 \times 0.075) - (0.005 \times 0.005)}{0.75 - 0.05}$

95. Simplify  $\frac{3\frac{1}{2} + 4\frac{1}{2} + 5\frac{1}{2}}{1\frac{2}{3} + 2\frac{1}{3} + 2\frac{2}{3}} \times \frac{3\frac{1}{2} + 4\frac{1}{2} + 4\frac{5}{6}}{7\frac{1}{2} + 8\frac{1}{2} + 9\frac{1}{2}}$

96. Simplify  $\frac{9\frac{7}{8} - 8\frac{6}{7} + 6\frac{5}{8} - 5\frac{1}{2}}{8\frac{9}{10} - 7\frac{1}{10} + 6\frac{7}{8} - 5\frac{7}{8}}$

97. Find the cost of papering the walls of a room 10 feet 8 inches wide, 19 feet 4 inches long, and  $9\frac{1}{2}$  feet high, with paper 2 feet wide at 5 cents a yard, allowing 10 yards of the paper for waste.

98. Simplify  $\frac{5\frac{1}{2} - 0.042 - 2.4 + 7\frac{5}{8}}{16\frac{2}{3} \div 60\frac{1}{2}}$

99. Find the circulating decimal equivalent to  $\frac{1}{1001}$ .



100. If oranges are bought at the rate of 20 for 25 cents, how many should be sold for \$12 to gain 40 per cent. on the cost?

101. Divide 24.109932 by 301.28.

102. A bought 63 sheep, and sold  $\frac{1}{3}$  of them at a profit of 15 per cent.,  $\frac{1}{4}$  at a profit of 50 per cent., and the rest at a loss of 25 per cent. What did he pay for the sheep, if his gain was \$19.25 on the whole?

103. If  $\frac{1}{3}$  of a sheep is worth \$ $\frac{3}{8}$ , and  $\frac{1}{4}$  of a sheep is worth  $\frac{1}{4}$  of an ox, what is the value of 100 oxen?

104. How many bricks, each 9 inches by 4 $\frac{1}{2}$  inches by 3 inches, are there in a pile 36 feet long, 9 feet wide, and 12 feet high?

105. After paying  $\frac{1}{3}$  of my money to one person,  $\frac{1}{2}$  to another, and  $\frac{1}{8}$  to a third, I had 7 cents remaining. How much had I at first?

106. A person walks at the rate of 3 $\frac{1}{2}$  miles an hour. Three hours after he has set out on a journey, he is followed by another person, walking at the rate of 5 miles an hour. In what time will he be overtaken?

107. A grocer mixes 72 pounds of tea at 69 cents a pound, with 90 pounds of tea at 60 cents a pound. At what price per pound must he sell the mixture so as to gain 10 cents a pound?

108. Find the interest of \$1,721.84 from April 1st to November 12th, at 4 $\frac{1}{2}$  per cent.

109. If two men can reap 2 $\frac{1}{2}$  acres in 2 $\frac{3}{4}$  days, how long will it take 11 men to reap 15 acres?

110. An army lost 18 per cent. of its strength by sickness and desertion, and then lost 14 per cent. of the remainder in battle. The number left was 84,624. Of how many did the army originally consist?

111. If 6 iron bars 4 feet long, 3 inches broad, and 2 inches thick weigh 288 pounds, how much will 15 bars weigh, each  $6\frac{1}{2}$  feet long, 4 inches broad, and 3 inches thick?

112. A rectangular cistern 9 feet long, 5 feet 4 inches wide, 2 feet 3 inches deep is filled with a liquid that weighs 2,520 pounds. How deep must a cistern be that will hold 3,850 pounds of the same liquid, if its length is 8 feet, and its width 5 feet 6 inches?

113. In what time will \$2,275 amount to \$2,673.12 $\frac{1}{2}$  at 5 per cent?

114. If 12 men can build a wall 6 feet high, 3 feet thick, in 9 days, how many men would build a wall of the same length, 5 feet high, 4 feet thick, in 24 days?

115. If 5 per cent be lost by selling an article at \$2.50, find the gain or loss per cent by selling it at \$3.12 $\frac{1}{2}$ .

116. Reduce 167,948,604 square inches to acres, etc.

117. A man contracts to perform a piece of work in 30 days, upon which he employs 15 men. In 24 days it is half finished. How many additional men must he employ to finish the work in time?

118. Reduce to its lowest terms the product of  $1 + \frac{1}{4} + \frac{1}{6} + \frac{1}{8} + \frac{1}{10} + \frac{1}{12}$ , and  $\frac{3}{8} - \frac{1}{4} + \frac{8}{10}$ .

119. If 3 men mow 20 acres in 11 days of 11 hours, how many men will it take to mow a rectangular field 384 yards long and 300 yards wide, in 4 days of 12 hours?

120. If by selling goods for \$272 I lose 15 per cent, how much per cent would I have lost or gained if I had sold them for \$336?

121. If oranges are bought at the rate of 20 for a dollar, how many should be sold for \$28 to gain 40 per cent?

122. Add together 536.421, 53, ~~62~~<sup>41</sup>1, 5.36421, and subtract the result from 100,000.

123. If 1,000 square yards produce a load of hay, how many loads will 25 acres produce?

124. Find the simple interest on \$281.63 at  $3\frac{1}{8}$  per cent for four years and 2 months.

125. A freight train is 8 miles ahead of an express that travels at the rate of a mile in  $1\frac{1}{4}$  minutes. Twenty minutes later the express runs into the freight train. At what rate is the freight train running?

126. If 7 men, working 16 days, can mow a field 1,320 yards long, and 880 yards wide, what will be the length of the side of a field 1,320 yards wide, which 4 men can mow in 42 days?

127. Divide 1.765 by 2470 to five places of decimals.

128. If 8 acres produce 220 bushels of corn, how much will 22 yards produce?

129. \$19.68 $\frac{3}{4}$  is  $2\frac{1}{2}$  per cent of what sum?

130. If 19 men can build 38 yards of wall in 12 days, how many men will build 96 yards, 2 feet, 3 inches in  $21\frac{1}{2}$  days?

131. If 12 men build a wall 60 feet long, 4 feet thick, and 20 feet high in 24 days, working 12 hours a day, how many men will it take to build a wall 100 feet long, 3 feet thick, and 12 feet high, in 18 days, working 8 hours a day?

132. How much per cent above cost must a man mark his goods in order that he may take off 30 per cent from the market price, and still make 30 per cent on the cost?

133. If a pint contains  $28\frac{7}{8}$  cubic inches, how many pints are there in a cubic foot of water?

134. Find .015 of 17 acres, 130 square rods.

135. If 5 needlewomen can finish a certain quantity of work in  $10\frac{5}{8}$  days of  $9\frac{3}{8}$  hours each, how long would it take 3 needlewomen to do twice the same work, reckoning 10 hours to the day?

136. Find the square root of .196 to four places of decimals.

137. How many horses will be required to plough 117 acres in 35 days, if 10 horses can plough 13 acres in 7 days?

138. If I buy 3,090 yards of cloth at  $92\frac{1}{2}$  cents per yard, and sell the whole for \$3,205.87½, what is the gain per cent?

139. How many bricks  $8\frac{3}{4}$  inches long,  $4\frac{1}{4}$  inches wide,  $2\frac{1}{2}$  inches thick, can be stored in a building  $17\frac{1}{2}$  yards long, 10 yards wide, and  $8\frac{1}{2}$  feet high?

140. How many men working for 11 cents an hour for 23 days of 9 hours, can earn the same wages as 22 men working for  $11\frac{1}{2}$  cents an hour for 18 days of  $9\frac{1}{2}$  hours?

141. A can mow  $\frac{2}{3}$  of a field in  $7\frac{1}{2}$  days, B can mow  $\frac{3}{4}$  of the same field in  $9\frac{1}{2}$  days. In what time can A and B together mow the field?

142. A train travels a certain distance in  $4\frac{7}{8}$  hours at the rate of  $16\frac{2}{3}$  miles an hour. How long will a train going  $19\frac{1}{4}$  miles an hour take to travel the same distance?

143. I pay for 180 yards of cloth at  $92\frac{1}{2}$  cents per yard, but it is measured with a yard stick  $\frac{5}{8}$  of an inch short. How much money does the seller unfairly take?

144. What will be the price of £540 stock at 76?

145. What stock at 95 can be bought for £855?

146. What annual income is derived from £6500  $3\frac{1}{2}$  per cent stock?

147. When stock is at 5 per cent premium I sell out £6600 of this stock ; what money do I receive ?

148. What is the rate of interest when the 3 per cents are at 72 ?

149. How much money shall I receive for £5400 stock at 10 per cent discount ?

150. The  $3\frac{1}{2}$  per cents being at  $91\frac{7}{8}$ , what amount of stock can be had for £2940 ?

151. The broker's charge being  $\frac{1}{8}$  per cent what will he receive on £2400, 4 per cent stock at 85 ?

152. I want to secure an income of £600 a year ; what amount of 3 per cent stock must I buy to produce it ?

153. What income will be produced by the investment of £6700 in the  $3\frac{1}{4}$  per cents at  $102\frac{3}{8}$ , taking brokerage into account ?

154. If £4000 10s. be invested in the 3 per cents at 92, what will be gained by selling out at 96 ?

155. By investing in the  $4\frac{1}{2}$  per cents at 95 I get an income of £360 ; what sum did I invest ?

156. When the  $3\frac{1}{2}$  per cent stock is at  $93\frac{1}{8}$ , how much must be sold out to realize £600, brokerage being taken into account ?

157. Find the change in a person's income who transfers £2400 from the 3 per cents at 90 to the  $3\frac{1}{2}$  per cents at 96 ?

158. How much stock is obtained by investing £4500 in bank stock at 210, brokerage being taken into account ?

159. Which is the better investment, the  $3\frac{1}{2}$  per cents at 86, or interest at  $3\frac{3}{4}$  per cent ?

160. What annual income will a person receive who invests £2000 in 4 per cent stock at 95, and £1000 in 3 per cent stock at £105?

161. A, B, and C, do a work in 10 days; A does  $1\frac{1}{4}$  times what B does in the same time, and B does  $\frac{3}{4}$  what C does in the same time. How long would it take each to do the work?

162. Bought a number of cattle for \$2000; had I bought 20 head more at a cost of ten dollars per head less, my entire outlay would have been \$2800. How many cattle were purchased?

163. Find interest on a note for \$515.62, dated March 1st, 1873, and paid July 16th, 1875, at 8%.

164. A man mowing grass walks at the rate of .35 miles an hour, and in 70 minutes mows a grass plot of 1056 square yards; how broad does he mow?

165. A tradesman has a cash price for goods and a nine months' credit price: money being worth 8% per annum simple interest, find the ratio of the prices.

166. Find what quantity must be added to

$$\left\{ \frac{1\frac{1}{2} \text{ of } 3\frac{1}{2}}{3\frac{1}{2} \text{ of } 2\frac{3}{4}} \text{ of } \frac{1\frac{3}{4} \text{ of } 1\frac{1}{8}}{1\frac{3}{4} \text{ of } 32\frac{3}{4}} + \frac{2\frac{1}{8} \text{ of } 6\frac{3}{8}}{3\frac{1}{8} \text{ of } 4\frac{1}{2}} \right\}$$

to make it equal to  $\left\{ \frac{1}{28\frac{7}{8}} \text{ of } 3\frac{3}{4} \text{ of } 3\frac{1}{4} \text{ of } 14\frac{1}{8} \right\}$

167. Seven-tenths of the selling price of certain goods is two per cent less than cost. Find the gain per cent at which the goods are sold.

168. I sold a quantity of Bank of Commerce stock at 115, and invested in Consolidated Bank stock at 92, which I afterwards sold at 98, and re-purchasing my Bank of Commerce stock which has risen to 120, I found I had gained \$125 by the operations. How much Bank of Commerce stock had I?

169. A boy hires with a farmer for \$100 a year and a suit of clothes, but leaving at the end of 7 months, receives \$50 and the suit of clothes. Find the value of the clothes.

170. Two sums of money are to be divided among three persons, one sum equally and the other in the proportion of 3, 5, and 8; the shares of the first two amount to \$64.56 and \$81.36; determine the sums.

171. If the rates of wages of a man, a woman, and a child, be as 6, 3, and 1; and 25 men, 30 women, and 16 children get \$640 for 10 days' work; find how much 32 men, 36 women, and 72 children should get for 8 days' work.

172. A man has a triangular field of which the sides are  $115\frac{1}{2}$  feet,  $128\frac{1}{3}$  feet, and  $134\frac{1}{4}$  feet; find the length of the longest boards of equal length that can be used in fencing it without cutting a board.

173. A publican uses measures which are false to the extent of 5%; but his brewer gave him in every barrel only 35 gallons. The publican buys at \$5.04 a barrel and sells at 4 cents a pint. What does he gain on a sale of 200 barrels?

174. What sum must be insured on a house worth \$665, so that in case of loss the owner may receive  $\frac{1}{4}$  of this sum, and also  $\frac{1}{4}$  of the premium, which was at 6 per cent?

175. If a number be increased 20%, and the amount be increased  $16\frac{2}{3}\%$ , the result will be 280; find the number.

176. Sold wheat at \$1.00 per bushel and gained \$30 on the quantity sold; had I sold it at \$1.12 $\frac{1}{2}$  I would have gained \$42 on the same quantity. How many bushels did I sell?

177. Seven men engage to do a piece of work in a certain time, but three of them failing to come, the work was prolonged  $7\frac{1}{2}$  days. In what time would the seven men have it done?

178. A merchant sells 90 lbs. of tea and coffee for \$76, the tea at 90 cents, and the coffee at 40 cents per lb. How many lbs. of each did he sell?

179. A dealer in selling goods sells  $15\frac{3}{4}$  oz. for a pound, how much does he cheat a customer who buys to the amount of \$40?

180. Sold goods for \$2.10 and gained  $\frac{1}{3}$  of the price. What part of the cost would be gained by selling at \$2.60?

181. Reduce to its simplest form

$$\frac{\frac{3}{4}}{\frac{1}{4}} \times \frac{\frac{1}{7}}{\frac{1}{1}} \times \frac{\frac{.00\frac{2}{3}}{7}}{\frac{.003\frac{1}{3}}{25}} \times \frac{207}{500}$$

182. A man bought a store and contents for \$4720; he sold the same for  $12\frac{1}{2}\%$  less than he gave, and then lost  $15\%$  of the selling price in bad debts. Find his entire loss.

183. A sells goods to B at a loss of  $4\%$ , B sells them to C at a loss  $6\frac{1}{4}\%$ , C sells them to D for \$390.60, gaining  $8\frac{1}{2}\%$ ; find the prime cost of the goods.

184. A and B invest capital in the proportion of  $3\frac{1}{2}$  to 4. After five months A withdraws one-half his capital, and B withdraws two-thirds of his. At the end of the year they have gained \$7,090; find each man's share.

185. A bankrupt has book debts equal in amount to his liabilities, but on \$24,000 of them he realizes only  $66\frac{2}{3}$  cents in the dollar, and the expenses of the bankruptcy are  $5\%$  on the book debts; he pays 65 cents in the dollar; find the amount of his liabilities.

186. Simplify

$$\frac{8\frac{3}{4} - \frac{1}{8} \text{ of } \frac{1}{2}}{6\frac{3}{4} \times \frac{1}{8} \text{ of } \frac{1}{2}} + \frac{10\frac{3}{4} \div \frac{1}{4} \text{ of } \frac{1}{2}}{21\frac{1}{2} \div \frac{1}{4} \times \frac{1}{2}} + \frac{2.8}{\frac{2}{7}} - \frac{.3}{.16}$$

187.  
of  $\frac{1}{2}$  of

188.  
If A and  
and C

189.  
A at \$  
acre, and  
acre; v

190.  
find the

191.  
miles)  
take h  
from B

192.  
out an  
improv  
in the

193.  
sold, A  
20 per  
purcha  
A and

194.  
2% ha  
stock a  
his inc  
railway



187. Reduce  $2\frac{1}{2}$  of  $3\frac{1}{2}$  of  $\frac{1}{2}$  of  $3\frac{1}{2}$  English ells to the fraction of  $\frac{2}{3}$  of  $\frac{2}{3}$  of  $5\frac{1}{2}$  French ells.

188. A can do a piece of work in 5, B in 6, and C in 8 days. If A and B work at it two days each, how long will it take B and C to finish it?

189. A man buys land at \$60 per acre. If he sell  $\frac{1}{3}$  of it to A at \$80 per acre,  $\frac{1}{6}$  of the remainder to B at \$22 for  $\frac{1}{4}$  of an acre, and the rest, which is 120 acres, to C at \$75 for  $\frac{2}{3}$  of an acre; what is his gain or loss?

190. Sold tea at 90 cents per lb., having gained  $\frac{3}{5}$  of the cost, find the selling price per lb. if he had lost  $\frac{5}{8}$ .

191. A man can row a boat from A to B (a distance of 30 miles) in  $7\frac{1}{2}$  hours if there be no current; how long would it take him to row it if there was a current of  $1\frac{1}{2}$  miles per hour from B to A?

192. When the 3 per cents were at 90, I found that by selling out and investing in India 4 per cents at 95, I could improve my income by £24 6s. Find the amount of my stock in the 3 per cents.

193. A own  $\frac{2}{3}$  of a vessel and B the remainder; the vessel is sold, A receiving 60 per cent of his share of the money, and B 20 per cent of his; B afterwards received \$4000 from the purchaser, and the balance then due was divided equally between A and B. What is the ship sold for?

194. A man sells out  $\frac{2}{3}$  of stock in a certain railway, paying 2% half-yearly dividends, and invests in Bank of Commerce stock at 120 and paying 4% half-yearly dividends; he finds that his income is thus increased  $\$33\frac{1}{3}$ ; find the amount of his railway stock.

195. A man's income is derived from the proceeds of \$4550 at a certain rate per cent, and \$5420 at one per cent more than the former rate ; his whole income being \$453, find the rates.

196. A farmer gives for a horse a bill of \$272, due in two months, and sold him at once for a bill of \$316, due in 5 months ; find the farmer's gain or loss, true discount being reckoned at  $4\frac{1}{2}$  per cent.

197. Reduce  $\frac{\frac{1}{6} \text{ of } 1\frac{1}{5} - \frac{1}{6} \text{ of } \frac{2}{3}}{\frac{1}{2} - \frac{2}{3} + \frac{4}{6} - \frac{1}{18}} \div \frac{3}{4} \text{ of } \frac{4}{5} \text{ of } \frac{6}{8} \text{ of a rod to the fraction of 2 furlongs.}$

198. A grocer, by selling 10 lbs. of tea for a certain sum, gained 20 per cent ; afterwards he increased his price, giving only 9 lbs. for the same money. How much per cent did he make at his increased price ?

199. Find the expense of papering a room 21 ft. long, 15 wide, and 12 high, with paper 30 inches wide, at 18 cents a yard, allowance being made for a door 7 ft. by 3 ft., and two windows each 5 ft. by 3 ft.

200. An insurance company took a risk at  $2\frac{1}{4}\%$ , and reinsured  $\frac{3}{5}$  of the risk at 2% ; the premium received exceeded the premium paid by \$42 ; find the amount of the risk.

201. Simplify  $\left\{ 1\frac{3}{8} + \frac{5}{4} \text{ of } \frac{21}{11\frac{2}{5}} - \frac{\frac{5}{6}}{2\frac{1}{2}} \right\} \div 2\frac{77}{144}$ .

202. A sum of money was divided among A, B, and C ; A received .939 of  $\frac{15}{11}$  of it ; B,  $\frac{3}{11}$  of it, and C, \$3015.30 ; find the amount divided.

203. A trench 80 yards long, 10 feet deep, and 9 feet wide, was completed by 20 men in  $12\frac{1}{2}$  days, of ten hours each ; and a trench 76 yards long, and twelve feet deep was completed by thirty men in  $7\frac{1}{2}$  days, of  $9\frac{1}{2}$  hours each ; how wide was the latter trench ?

204. The cost of carpeting a room  $10\frac{1}{2}$  yards long, with carpet 27 inches wide, and costing \$1.35 a yard, was \$93.15 : find the width of the room.

205. A grocer mixes 60 lbs. of tea at 65 cents a lb., with 80 lbs. at 60 cents a lb.; at what rate per lb. must he sell the mixture to gain 30%?

206. A person loaned \$480 for two months and 13 days, at 9% : what interest did he receive?

207. I send \$5250 to a commission merchant in Montreal, who charges 5% for investing, with instructions to purchase certain goods, deducting his commission from the amount of money sent him : find his commission.

208. A coal dealer bought 784,000 lbs. of coal, at \$4.50 a ton (2240 lbs.), and sold 524,500 lbs. of it at the rate of \$5.50 per short ton (2000 lbs.), and the balance at \$4.20 per short ton : find the whole gain.

209. From a pound Troy are coined  $46\frac{2}{3}$  sovereigns ; find (in £ s. d.) the price per oz. of gold.

210. Divide \$29.50 between two persons, so that one shall receive half as much again as the other.

211. Simplify  $\frac{1}{3}$  of  $\frac{1\frac{3}{8}}{13\frac{1}{3}}$  of  $\frac{1\frac{2}{3}}{\frac{1}{2} + \frac{3}{4}}$  of  $\frac{6\frac{5}{12}}{3\frac{2}{3}}$

211. The sum paid for 494 gallons oil, *including* a duty on each gallon which amounts to  $\frac{1}{5}$  of the cost price of a gallon, is \$1719.12 ; find the duty on a gallon.

213. A person insured a house for  $\frac{4}{5}$  its value at  $1\frac{1}{4}\%$  annually; after paying 6 premiums the house was destroyed, the entire loss being \$1945. Find value of the house.

214. A parcel of 12 lbs. weight is carried 80 miles by rail for 56 cents, and the rate for the distance over 50 miles is two-thirds of the rate for the first 50 miles; how far can a parcel of 8 lbs. be carried for 16 cents?

215. A and B agree to do a certain piece of work for \$25; A could do it in 8 days, and B in 10; but C joining them, the work is done in 3 days: how should the money be divided?

216. State the difference between "True" and "Bank" discount. I owe a man \$575, and gave him a note at 60 days: what must be the face of the note to pay him the exact debt, when discounted at (Bank discount)  $1\frac{1}{2}\%$  a month?

217. A drover bought oxen at \$40, cows at \$30, and sheep at \$10 a head; there were  $2\frac{1}{2}$  times as many cows as oxen, and 5 times as many sheep as cows, and the whole cost was \$1440; how many of each did he buy?

218. Find the cost of painting a room 20 ft. 3 in. by 18 ft. 6 in., and 10 ft. high, having two windows, each 7 ft. by 4 ft., at the rate of 50 cents a square yard.

219. The true discount on \$1235.68  $\frac{1}{2}$  for 210 days is \$31.17  $\frac{1}{2}$ ; find the rate per cent.

220. What sum of money must be divided among A, B and C, so that A may have \$1.44, and C \$2.25, and that B may have as much per cent more than A as C has more than B?

221. Divide the number 474 into three such parts that three times the first may be equal to 5 times the second and to eight times the third.

222. Simplify,

$$\left\{ \frac{\frac{2}{3} + \frac{5}{6} + \frac{7}{8} + \frac{11}{12}}{\frac{3}{4} - \frac{5}{8}} \times \frac{1}{34\frac{1}{2}} \right\} \div \left\{ \frac{7\frac{1}{2}}{6\frac{1}{2}} + \frac{11\frac{1}{2} - 2\frac{2}{3}}{11\frac{1}{2} + 2\frac{2}{3}} \times 10\frac{9}{13} - 7\frac{1}{8} \right\}$$

223. A wine merchant pays \$175 for a hogshead of wine, and bottles it off into an equal number of quart, pint, and half-pint bottles: how many dozen of each has he, and at what must he sell it per dozen to gain  $\frac{3}{20}$  of his outlay?

224. What must be the face of a note so that when discounted at a bank for 4 months and 9 days, at 9 per cent, it will give \$240?

225. A, B and C having equal shares of a ship, sell respectively one-third, one-quarter, and one-fifth of their shares to D, who dies and leaves his share equally among them: If B's and C's interest in the ship be now worth \$37,300, what is the value of A's share?

226. A farmer has 500 bushels of wheat; he can sell it at once for \$1.20 a bushel; by storing it for six months at a cost of \$20 paid in advance, he can realize \$1.30 a bushel; he adopts the former course; money being worth 8% per annum, determine how much he has gained or lost by so doing.

227. Express the value of  $.8\dot{3}$  of 8s. +  $.0\dot{5}$  of 2 guineas + 1.8 of 5s.

228. A merchant bought a number of barrels of flour for \$1800; he used 20 bbls. and sold  $\frac{1}{3}$  of the remainder for \$1568, which was \$224 more than cost. How many barrels did he buy?

229. When gold is quoted at  $133\frac{1}{3}$ , what is the gold value of a \$10 greenback?

230. What is the area of a circle whose diameter is 1 foot 1 inch?

231. How many pencils may be bought for \$1.00, so that 20% may be gained by selling them 4 for 1 cent?

232. A boy hired to a mechanic for 20 weeks for \$20 and a coat, at the end of 12 weeks the boy quit work and was paid \$9 and the coat. Find value of coat.

233. At what discount must I buy stocks so that by selling at 2% premium I may gain 20% on my investment?

234. What number is that,  $\frac{3}{15}$  and  $\frac{1}{4}$  of which being multiplied together will produce the number itself?

235. A and B can build a wall in 4 days, B and C in 6 days, A and C in 5 days; required the time, if they work together?

236. A makes B a present of \$100 on condition that he shall expend it in cows, sheep, and geese; cows at \$10, sheep at \$1, and geese at  $16\frac{2}{3}$  cents, so as to have just a hundred in the whole. How many must he purchase of each?

237. A, B and C start from the same point to travel round an island in the same direction, 73 miles in circumference; A at the rate of 6, B 10, and C 16 miles per day, in what time will they be met together?

238. By selling at 33 cents a pound, twice as much is gained as by selling at 29 cents a pound, what per cent is gained by selling at 32 cents a pound?

239. A house that cost \$8250 rents for \$750 a year, the insurance is  $\frac{6}{100}\%$ , and repairs  $\frac{1}{2}\%$  every year. What rate of interest does it pay?

240. A box, with cover, made of board an inch thick, measures on the outside, 20 inches long, 14 inches wide, and 8 inches deep; find the cubic contents of the interior, and the cost of painting the outside at 18 cents per square foot.

241. I can obtain \$6 more per annum by investing a certain sum in 5 per cents at  $128\frac{1}{4}$  than in the 3 per cents at 81; what is the sum?

## ANSWERS

- |   |  |
|---|--|
| 1. $\frac{9}{2}$ of 8.2 ; greatest $\frac{1}{3}$ of 9 $\frac{1}{2}$ . | 23. 576.   |
| 2. 40 $\frac{1}{4}$ miles.  | 24. £600.  |
| 3. 2 feet 9 $\frac{3}{8}$ inches.                                     | 25. <del>7</del> 1320  |
| 4. 114 yards.   | 26. 48 guineas.  |
| 5. 82 $\frac{3}{8}$ .   | 27. 3 inches.  |
| 6. 37.2748839. .0625.   | 28. £8,400.  |
| 7. 11 $\frac{1}{4}$ feet.   | 29. £2,400 ; £1,200 ; £200.  |
| 8. 88 perches.  | 30. 36 minutes.  |
| 9. \$2,080.   | 31. 1 day 4 hours after C joined A and B.  |
| 10. 15 acres.   | 32. .009984 ; 9.0958 9.0958  |
| 11. 2 $\frac{2}{3}$ mills.  | 33. £12 10s. 1 $\frac{1}{2}$ d.  |
| 12. \$958.30.   | 34. £540.  |
| 13. \$156.816   | 35. £8 2s.   |
| 14. 1040 feet.  | 36. .555555.   |
| 15. \$4.77.   | 37. £86 8s.  |
| 16. \$86.40.  | 38. 4 $\frac{4}{5}$ hours.   |
| 17. \$14.30.  | 39. 3 days.  |
| 18. \$3240.   | 40. 5480 yards.  |
| 19. \$17.50.  | 41. 10 feet.   |
| 20. \$1170.   | 42. 15 acres, 155 square rods, 23 square yards, 1 square foot, 24 square inches. |
| 21. 5760 feet.  |  |
| 22. 5 $\frac{1}{3}$ .   |  |

43. 2 weeks, 6 days, 5 hours,  
52 minutes, 14 seconds.
44. 18 miles, 230 rods, 8 feet,  
10 inches.
45.  $\frac{18}{35}$ .
46. 3 rods, 2 feet,  $11\frac{8089}{8128}$  in.
47. 100; 0.01.
48.  $11\frac{9}{13}$ .
49. 2.045.
50. 0.02; 35; 6.056.
51. 609,840.
52. 25 gallons.
53. 13.
54. 80 rods, 22 yards.
55. 57.8948.
56. 3,564 yards. *cts*
57. ~~\$31.27~~ *31.25*
58. \$4,905.
59. 13 feet.
60. 10 yards, 11 inches.
61.  $1\frac{9}{14}$ .
62. 20542.5.
63. 524.16231.
64. 0.7003005.
65.  $2\frac{23}{48}$  *2103*
66. 37026 feet. *240*
67.  $26\frac{2009}{4800}$ .
68. A  $\frac{3}{40}$ ; B  $\frac{10}{280}$ ; C  $\frac{2}{36}$ .
69. 0.216.
70. ~~71.498~~ *71.498*
71. 10254875.
72. 16.01168.
73. 24 lbs.

74. ~~113~~ *119* per cent.
75. \$137.50.
76.  $1\frac{18}{13}$ .
77. ~~\$0.26~~ *26*
78. A, by  $7\frac{1}{2}$  minutes.
79.  $136\frac{8}{9}$  yards.
80. \$0.07  $\frac{1}{2}$ .
81. 6,199. *\$ 67*
82. ~~\$10.41~~ *12.61*
83. 176 yards.
84. 3 years.
85. 44 square yards, 5 square  
feet.
86. 165 men.
87. 3,000 men.
88. \$600.
89. 15 days.
90. Gain  $3\frac{1}{3}$  per cent.
91.  $13\frac{1}{2}$  inches.
92. 4 horses.
93. 208 A.
94. 0.008.
95. 1.
96. 1.
97. \$5.25.
98. 40.2175.
99. 0.000999.
100. 6857.
101. 0.080025
102. \$551.25.
103. \$2,000.
104. 55296.
105. 48 cents.



106. 7 hours.  
 107. 74 cents.  
 108. \$47.76.  
 109. 3 days.  
 110. 120,000.  
 111. 2340 lbs.  
 112. 3 feet, 9 inches.  
 113. 3 years, 6 months.  
 114. 5 men,  
 115.  $18\frac{3}{4}$  per cent gain.  
 116. 26 acres, 126 square rods,  
       29 square yards, &c.  
 117. 45 men.  
 118.  $\frac{1}{3}$ .  
 119. 9 men.  
 120. 5% gain.  
 121. 400.  
 122. 45816. 11479.  
 123. 121.  
 124. \$36.33 $\frac{1}{3}$ . 6  $\frac{1}{12}$   
 125. 24.  
 126. 1320 yards.  
 127. 0.00071.  
 128. 4 quarts.  
 129. \$945.  
 130. 27 men.  
 131. 18 men.  
 132.  $85\frac{5}{7}$  per cent.  
 133.  $59\frac{6}{7}$ .  
 134. 42 square rods, 22 square  
       yards, 6 square feet,  
       27 square inches.  
 135. 34 days.
136. 0.4427.  
 137. 18 horses.  
 138.  $12\frac{1}{6}$  per cent nearly.  
 139. 248,832.  
 140. \$89.15 $\frac{5}{8}$ . 19 men  
 141.  $81\frac{9}{16}$ .  
 142. 4 hours.  
 143. \$2.89 $\frac{1}{2}$ .  
 144. £410 8s.  
 145. £900.  
 146. £227 10s.  
 147. £6930.  
 148. £4 $\frac{1}{8}$ .  
 149. £4860.  
 150. £3200.  
 151. £3.  
 152. £20,000.  
 153. £211 18s.  $51\frac{4}{8}$  d.  
 154. £173 18s.  $8\frac{2}{8}$  d.  
 155. £7600.  
 156. £645 3s.  $2\frac{2}{8}$  d.  
 157. £7 10s. gain.  
 158. £2141 11s.  $71\frac{3}{8}$  d.  
 159.  $3\frac{1}{2}$  per cents.  
 160. £112 15s.  $71\frac{8}{8}$  d.  
 161. A  $28\frac{2}{3}$ ; B  $35\frac{5}{8}$ ; C  $26\frac{7}{8}$   
 162. 40 head.  
 163. \$97.9+.  
 164.  $1\frac{4}{10}$ .  
 165. 50: 53.  
 166.  $1\frac{7}{10}$ .  
 167. 40%.  
 168. 6000 stock.

169. \$20.  
 170. \$118.08. \$134.40.  
 171. \$744.  
 172.  $6\frac{5}{12}$ .  
 173. \$1349.89 $\frac{0}{10}$ .  
 174. \$400.  
 175. 200.  
 176. 96 bushels.  
 177. 10 days.  
 178. 80 lbs. tea, 10 lbs. coffee.  
 179. 62 $\frac{1}{2}$  cents.  
 180.  $\frac{9}{7}$ .  
 181.  $\frac{1}{35}$ .  
 182. = \$1209.30.  
 183. = Cost C \$360; B \$384;  
       A \$400.  
 184. A's gain \$3570; B's gain  
       \$3520.  
 185. \$26666 $\frac{2}{3}$ .  
 186.  $(17\frac{2}{3})^{\frac{1}{2}}$   $16\frac{4}{5}$   
 187.  $\frac{3\frac{2}{5}}{2\frac{1}{4}}$ .  
 188.  $\frac{3\frac{2}{5}}{3\frac{2}{5}}$  of a day.  
 189. \$10140.  
 190. 66 $\frac{2}{3}$  cents.  
 191. 12 hours.  
 192. £3078 stock.  
 193. \$50,000.  
 194. \$4166 $\frac{2}{3}$ .  
 195. 4% 5%.  
 196. \$40.20.  
 197.  $\frac{1}{120}$  of furlong.  
 198. 33 $\frac{1}{3}$ %.  
 199. \$19.512.  
 200. \$4000.  
 201. 1 $\frac{1}{4}$ .  
 202. \$11056.10.  
 203. 6 $\frac{3}{4}$  feet.  
 204. 41 $\frac{3}{4}$  yards.  
 205. 80 $\frac{1}{11}$ .  
 206. \$8.76.  
 207. \$250.  
 208. \$412.32 $\frac{1}{2}$ .  
 209. £3 17s. 10 $\frac{1}{2}$ d.  
 210. \$11.80 \$17.70.  
 211.  $\frac{67}{100}$ .  
 212. 58 cents.  
 213. \$7480 $\frac{1}{8}$ .  
 214. 30 miles.  
 215. A \$9.37 $\frac{1}{2}$ ; B \$7.50; C  
       \$8.12 $\frac{1}{2}$ .  
 216. \$593.70.  
 217. 6 oxen; 15 cows; 75  
       sheep.  
 218. \$39.94 $\frac{1}{4}$ .  
 219. 4 $\frac{1}{2}$ %.  
 220. \$5.49.  
 221. 240. 144. 90.  
 222.  $\frac{1\frac{6}{11} + \frac{3}{11}}{2\frac{1}{2} + \frac{1}{4}}$ .  
 223. 1 dozen each, \$2.39 $\frac{7}{12}$ ,  
       \$4.79 $\frac{1}{6}$ , \$9.58 $\frac{1}{4}$ .  
 224. \$247.998.  
 225. \$16700.  
 226. Loss \$5.  
 227. 17s. 9 $\frac{5}{11}$ d.  
 228. 300 barrels.  
 229. \$7.50.  
 230. 132.7326 square inches.  
 231. 480.  
 232. \$7.50.  
 233. 15%.  
 234. 20.  
 235. 3 $\frac{9}{17}$  days.  
 236. 5 cows, 41 sheep, 54 geese  
 237. 36 $\frac{1}{2}$  days.  
 238. 28%.  
 239. 8%.  
 240. 1296 cubic inches, \$1.38.  
 241. \$3078.

APPENDIX

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1. Define Arithmetic as a *Science* and as an *Art*. As a Science, it logically investigates and philosophically classifies and arranges the principles and rules of the subject ; as an Art it applies these principles to the practical affairs of life.

2. Upon what is Arithmetic founded, and how are its operations carried on? It is founded on notation, and its operations are carried on by means of addition, subtraction, multiplication and division.

3. What is a Unit? One, or a single thing.

4. What is a number? A unit or a collection of units.

5. What is an integer? A whole number.

6. What is notation? A method of counting or expressing numbers by characters.

7. What is numeration? A method of reading numbers expressed by characters.

8. What is an abstract number? A number used without reference to any particular thing.

9. Concrete number? One that has reference to a particular thing.

10. How are numbers classified? They are classified as follows: as even and odd, prime and composite, integral and fractional, abstract and concrete, simple and compound, like and unlike.

11. What is the minuend? The number to be subtracted from.

12. What is the subtrahend? The number which is subtracted.

13. What is factoring? The process of separating numbers into factors.

14. What is a prime number? One that cannot be resolved into factors.

15. When are numbers prime to each other? When they have no common divisor.

16. What is a common divisor? One that will divide two or more numbers without a remainder.

17. The greatest common factor? Is the greatest factor that will divide two or more numbers without a remainder.

18. What is a least common multiple? Is the least number that is exactly divisible by two or more given numbers.

19. What is a vulgar fraction? A part of a unit.

20. What is a decimal fraction? A fraction whose denominator is increased or decreased in ten fold ratio.

21. Upon what does the value of a decimal depend? Its place from the decimal point.

22. What are circulating decimals? A decimal in which a figure or set of figures are continually repeating.

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23. What is the difference between decimal fractions and common fractions? The first has a denominator *understood*, showing that a unit is divided into ten equal parts, or subdivided into a ten-fold ratio; the second has a denominator shewing that a unit is divided into any number of equal parts.

24. What is currency? The medium of circulation.

25. From what was the sign \$ derived? From the initial letters of the *United States*. U. S. joined together as a monogram.

26. What is a standard unit? A unit of measure from which the other units of the same kind may be derived.

27. What is the standard unit of value? Money is the standard unit of value and is of two kinds, coin and paper money. In Canada and the United States the standard unit is the dollar. In English money it is the pound.

28. What is the standard unit of weight? Troy pound.

29. What is the standard unit of length? Yard, &c.

30. What is the standard unit of surface? Square yard for ordinary measurement, and acre for land.

31. What is the standard unit of volume? Cubic yard for ordinary measurement, and cord for wood.

32. What is the standard unit of capacity? Gallon for fluids and bushel for dry measure.

33. What is the standard unit of time? Day, this is determined by revolution of the earth.

34. What is the difference between a lb. Troy and a lb. Avoirdupois? Troy has 5760 grains, Avoirdupois has 7000 grains.

35. What is linear measure ? That which is used in measuring lines or distances.

36. What is a square ? A figure having four equal sides and four equal angles.

37. What is a cube ? A figure having six equal sides.

38. How many inches in a wine gallon ? 231 cubic inches.

39. How many inches in a beer gallon ? 282 cubic inches.

40. How many inches in a bushel ? 2,150.4 cubic inches.

41. What is commission ? Per centage allowed an agent or commission merchant.

42. What is brokerage ? The fee paid a broker for the transaction of business.

43. What is insurance ? Security on property guaranteed by one party to another, for a stipulated sum, against the loss of that property by any casualty.

44. What is a policy ? A written contract between the parties.

45. What is a premium ? Sum paid for insurance.

46. What is interest ? A sum paid for the use of money.

47. What is usury ? Illegal interest.

48. What is the difference between simple and compound interest ? Simple interest is the interest on the principal only. Compound interest is the interest on the amount.

49. What is discount ? An allowance made for the payment of a debt before it is due.

50. What is the present worth of a debt ? The present worth of a debt is such a sum which, being put at legal interest would amount to the debt when due.